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Valvular Heart Disease

EFFECTS OF RESPIRATION ON THE ECHOCARDIOGRAPHIC ASSESSMENT OF TRICUSPID REGURGITATION SEVERITY

Poster Contributions
Hall C
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Session Title: Valvular Heart Disease: Functional Imaging
Abstract Category: 28. Valvular Heart Disease: Clinical
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Background: Despite the fact that venous return augments with inspiration, current guidelines do not specify during which phase of the respiratory cycle tricuspid regurgitation (TR) should be measured. Accordingly, we sought to determine whether imaging of the vena contracta (VC) using 2D and 3D transthoracic echocardiography (TTE) at different phases of the respiratory cycle affects determination of TR severity.

Methods: We prospectively studied 16 patients (65±16 yrs) with >mild TR on TTE. Color Doppler imaging of the tricuspid valve in the right ventricular (RV) inflow and apical 4-chamber (A4C) views and 3D full-volume color Doppler imaging were performed during both inspiration and expiration. For both respiratory phases, VC was quantified from both 2D and 3D images: VC width from RV inflow and A4C views, and VC cross-sectional area from en-face views extracted from 3D datasets.

Results: All VC measurements were larger during inspiration (fig): 2D VC width on inspiration and expiration were 0.9±0.5 vs. 0.6±0.4 cm (p=0.1) for the RV inflow view, and 1.6±2.9 vs. 1.1±2.0 cm (p=0.6) for the A4C view. 3D VC areas on inspiration and expiration were 0.57±0.50 and 0.19±0.21 cm2, (p<0.01) respectively. Inspiration increased TR severity by 1 grade in 3/16 patients (inflow) and 7/16 patients (A4C).

Conclusions: TR severity may be underestimated if measured during expiration solely. Future guidelines for right-sided valvular assessment should specify the respiratory phase during which data should be acquired.